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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/916,629	08/22/1997	CHAD A. COBBLEY	97-0098	3496
7590 05/03/2005 STEPHEN A GRATTON 2764 SOUTH BRAUN WAY LAKEWOOD, CO 80228			EXAMINER AFTERGUT, JEFF H	
			ART UNIT 1733	PAPER NUMBER

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

08/916,629

Applicant(s)

COBBLEY ET AL.

Examiner

Jeff H. Aftergut

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 and 40-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22, 40-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: there is no antecedent basis in the specification for the recitation that the volume of the adhesive and the pressure applied to the assembly both dictate the thickness of the adhesive in the final assembly. In each of claims 6, 20, and 44, the applicant recites that the "volume and the pressure" are "selected to form the adhesive with a selected thickness", however the original disclosure failed to provide support for this language. Rather as described on page 7, lines 27-34, the original disclosure appears to suggest that the total volume of adhesive applied dictated the thickness of the final adhesive layer and there is no mention of the pressure application controlling the thickness of the adhesive in the finished assembly. More specifically the original disclosure states:

A total volume of the adhesive material applied to the leadframe 12 (or to the die 10) is dependent on the size of the die 10 and a desired thickness of the cured adhesive layer 20 (Figure 1B). A representative total volume of adhesive material for a 4.4 mm x 9.4 mm die can be from 0.0025 grams to 0.0011 grams. The resultant adhesive layer 20 (Figure 1B) can have a thickness of about 0.25 mils to 2 mils.

It is suggested that applicant amend the specification at page 7 to recite that the pressure applied also determines the resulting thickness of the adhesive in the finished assembly.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1-20 and 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krall in view of Chorbadijiev et al, the admitted prior art, either one of Zwick or PCT WO 97/06953 and either one of Loctite 410 or Loctite 416 optionally further taken with the state of the prior art as exemplified by at least one of Liang et al, Fogal et al, Farnworth, Davis and German Patent 4107347 for the same reasons as expressed in the Office action dated December 6, 2004, paragraph 6.
3. Claims 21, 22, 40, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of either one of PCT WO/06953 or Zwick and further taken with Japanese Patent 58-196,280 for the same reasons as expressed in paragraph 7 of the Office action dated December 6, 2004.

Response to Arguments

4. Applicant's arguments filed April 8, 2005 have been fully considered but they are not persuasive.

The applicant initially addresses the reference to Krall and states that the reference relates to non-analogous art. The applicant is advised that Krall stands alone for what it teaches to those of ordinary skill in the art. While the gist of the reference is related to the use of cyanoacrylate adhesives in a surgical procedure, the reference expressly stated that those skilled in the art at the time the invention was made would have incorporated a cyanoacrylate adhesive to join a die to a leadframe where it states:

Art Unit: 1733

"Radiopaque cyanoacrylate compositions are also useful for the general adhesive applications to which cyanoacrylates are put, such as the bonding of metal, plastic and ceramic parts. Radiopacity of such compositions allows inspection of the integrity of the joined seam. For instance, in the manufacture of electronic microchips it has been suggested that MCA may be a useful adhesive for joining contact leads to the chips. Since a major failure mode of electronic chips occurs at the chip-lead interface, it would be advantageous if such cyanoacrylate adhesives were radiopaque so that the weld could be examined." (column 1, lines 42-53, emphasis added)

clearly, the reference to Krall on its face suggested that those skilled in the art of semiconductor manufacture would have been well aware that a cyanoacrylate adhesive would have been useful for attachment of the chip to the leadframe in the manufacture of the electronic components. While the reference does not go on in any further detail of the processing, the artisan in the art of semiconductor manufacture and the attachment of components to leadframes would have known what was going on in Krall. The artisan in semiconductor electronic manufacture is highly skilled and would have known how to use the teachings of Krall to manufacture a suitable end product (whether the gist of Krall relates to such or not is immaterial to the question of obvious as defined herein and the prima facie case which has been established).

As previously noted, the references applied above evidence that those skilled in the art would have understood what was meant by the joining of the leads to the chip as well as the use of electrically conductive fillers in the adhesive material. Applicant is referred to the previous Office actions for a more detailed response to the same. It is agreed that Krall makes no mention of automation for attachment of the die to the leadframe, however those versed in the art at the time the invention was made would have readily appreciated that in the manufacture of semiconductor electronic

Art Unit: 1733

components, automated manufacture was conventional and well known to the ordinary artisan and such would have been performed when productivity was at issue.

Regarding the reference to Japanese Patent '280, the reference clearly suggested that those skilled in the art at the time the invention was made would have utilized the anaerobic adhesive in order to join the die to the leadframe. It should be noted that the admitted prior art suggested that it was known to utilize adhesive to join the die to the leadframe. The problem faced by the ordinary artisan was the amount of time required to obtain the bond. The applicant is advised that those versed in the art would have understood from the admitted prior art that it was known to attach a semiconductor chip to a leadframe in the manner described. The reference to Japanese Patent '280 suggested that in semiconductor packaging, it was known to incorporate an anaerobic adhesive material therein in order to facilitate a quick bond of the components. One skilled in the art at the time the invention was made would have found it obvious to utilize the anaerobic quick curing adhesive of Japanese Patent '280 in order to join a semiconductor die to a leadframe. It should be noted that the purpose of Japanese Patent '280 was to form a bond quickly without having to temporarily bond the layers together, in other words, it wanted to form a permanent bond between the chip and the board quickly without having to allow the resin to cure for a long period of time. Clearly, the use of the anaerobic adhesive in the process of the admitted prior art would have been desirable. The reference to Japanese Patent '280 additionally expressed that the adhesive cured in a few seconds and the applicant's admitted prior art suggested that anaerobic adhesives which cured in a few seconds were known per se.

Art Unit: 1733

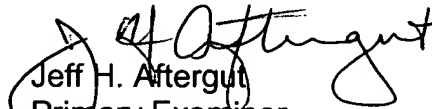
No claims are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on 571-272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jeff H. Aftergut
Primary Examiner
Art Unit 1733

JHA
May 1, 2005